

STORM SEWER NOTES

1. STORM SEWER PIPE AND APPURTENANCES SHALL CONFORM TO CITY OF COLUMBUS STORMWATER DESIGN MANUAL, AND CITY OF COLUMBUS ORDINANCE NO. 29-2008, "STORMWATER MANAGEMENT IN THE CITY OF COLUMBUS, INDIANA", FOR DESIGN AND MATERIALS.
2. CONSTRUCTION PROCEDURES AND MATERIALS SHALL COMPLY WITH APPLICABLE SECTIONS OF THE INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION
3. PIPE AND FITTINGS USED IN STORM SEWER CONSTRUCTION SHALL BE CONCRETE PIPE (ASTM C-70), PVC PIPE (4"-24" ONLY; ASTM 3034-SDR 35, ASTM F-679, OR ASTM F-794), HOBAS PIPE (24" AND LARGER ONLY; ASTM D3262, D4161, D2412, FIBERGLASS SLEEVE COUPLINGS USING ELASTOMERIC SEALING GASKETS MADE OF EPDM COMPOUND PER ASTM D 4161, ADS N-12 (36") AND ADS N-12HC (42"-48" ONLY) DUAL WALL SINGLE MOLD HDPE PIPE WITH WATER TIGHT INTEGRAL BELL COUPLERS (AASHTO M-294, ASTM F-667). OTHER PIPE AND FITTINGS NOT SPECIFIED HEREIN MAY BE USED ONLY WHEN SPECIFICALLY AUTHORIZED IN WRITING BY THE CITY.
4. ALL STORM SEWERS SHALL BE HIGH PRESSURE WATER JET CLEANED. MAINLINE STORM SEWERS (MANHOLE TO MANHOLE) SHALL BE TELEVIEWED. LATERAL STORM SEWERS (MANHOLE TO INLET, INLET TO INLET) IN EXCESS OF 40 FT. SHALL ALSO BE TELEVIEWED. MAINLINE STORM SEWERS AND LATERAL STORM SEWERS THAT ARE 36" DIAMETER OR LESS SHALL BE SUBJECTED TO A DEFLECTION TEST USING A GO-NO-GO MANDREL (95% DIAMETER) WHEN CONSTRUCTED USING FLEXIBLE PIPE CONDUIT MATERIALS. MAINLINE STORM SEWERS AND LATERAL STORM SEWERS THAT ARE GREATER THAN 36" DIAMETER REQUIRE THIRD PARTY TESTING AND CERTIFICATION (DAIRY) OF THE BEDDING INSTALLATION WHEN CONSTRUCTED USING FLEXIBLE PIPE CONDUIT MATERIAL. CLEANING, TESTING, AND TELEVIEWING SHALL BE PERFORMED A MINIMUM OF 45 DAYS AFTER INSTALLATION, AND SHALL BE WITNESSED BY THE CITY. ALL COST OF CLEANING, TESTING, AND TELEVIEWING ARE TO BE BORNE BY THE CONTRACTOR. A COPY OF THE CCTV FILE DIGITAL FILE SHALL BE RETAINED BY THE CITY.
5. TRENCHES, WITHIN THE RIGHT OF WAY, UNDER PAVED AREAS (INCLUDING SIDEWALKS) SHALL BE BACK FILLED WITH FLOWABLE FILL PER INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS LATEST EDITION, SECTION 211 AND THE CITY STREET CUT DETAIL. FLOWABLE FILL TO EXTEND FIVE FEET BEYOND THE LIMITS OF PAVED AREA WITH A 1:1 SLOPE TO THE BOTTOM OF THE TRENCH.
6. CONFIGURATION OF INLETS IN PRIVATE PARKING OR DRIVING AREAS MAY BE VARIED TO ACCOMMODATE THE DIMENSIONS OF THE CASTINGS, PRIOR WRITTEN APPROVAL OF THE CITY IS REQUIRED.
7. 18" VERTICAL SEPARATION AND 10'-0" HORIZONTAL SEPARATION TO BE MAINTAINED BETWEEN WATER MAINS, HYDRANTS, STORM SEWERS, AND SANITARY SEWERS.
8. SEWER PERMIT AND CITY INSPECTION REQUIRED FOR ALL CONNECTIONS TO STORM SEWER SYSTEMS. SEWER PERMIT REQUIRED ON SITE DURING ANY SEWER CONSTRUCTION.
9. ALL TAPS TO CONCRETE PIPE SHALL BE MADE WITH BOOT AND SADDLE CONNECTORS AND SHALL BE CORE DRILLED ONLY.
10. ALL INLETS SHALL BE DEPRESSED 0.1 FT. BELOW PLAN GRADE.
11. ALL SEWER LINES SHALL HAVE 0.1 FT. DROP THROUGH MANHOLES.
12. CASTINGS SHALL BE CENTERED ON OPENING IN STRUCTURES.
13. MINIMUM 4" OPENING REQUIRED ON BACK OF CURB INLET CASTING.
14. TOP OF MANHOLE FRAMES TO BE SET AT PROPOSED YARD OR SIDEWALK GRADE WHEN LOCATED IN FRONT AREA OF LOT OR RIGHT OF WAY.
15. BICYCLE SAFE GRATES REQUIRED IN PAVED AREAS EXCLUDING PAVED FLOW LINES IN SWALES OR DETENTION AREAS.
16. ANIMAL GUARDS SHALL BE PERMANENTLY INSTALLED ON ALL PIPE END SECTIONS 18" OR LARGER IN DIAMETER. GUARDS SHALL HAVE A MAXIMUM CLEAR OPENING OF 4" AND BE REMOVABLE.
17. IF ANY EXISTING FIELD TILE SYSTEMS ARE ENCOUNTERED DURING THE CONSTRUCTION PROCESS THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONSTRUCTING THE TITLE TO ITS ORIGINAL CONDITION OR CONNECT IT INTO THE PROPOSED STORM DRAIN SYSTEM.
18. WHENEVER PROPRIETARY EQUIPMENT IS SPECIFIED OR "APPROVED EQUAL" IS IMPLIED ALL PROPOSALS FOR SUBSTITUTIONS SHALL BE SUBMITTED TO THE CITY IN WRITING FOR THEIR APPROVAL.
19. ALL PIPE CONNECTIONS TO STRUCTURES OR OTHER PIPES SHALL BE INSPECTED BY THE CITY PRIOR TO BACKFILL PLACEMENT.

TELEVISION INSPECTION CRITERIA
STORM SEWERS

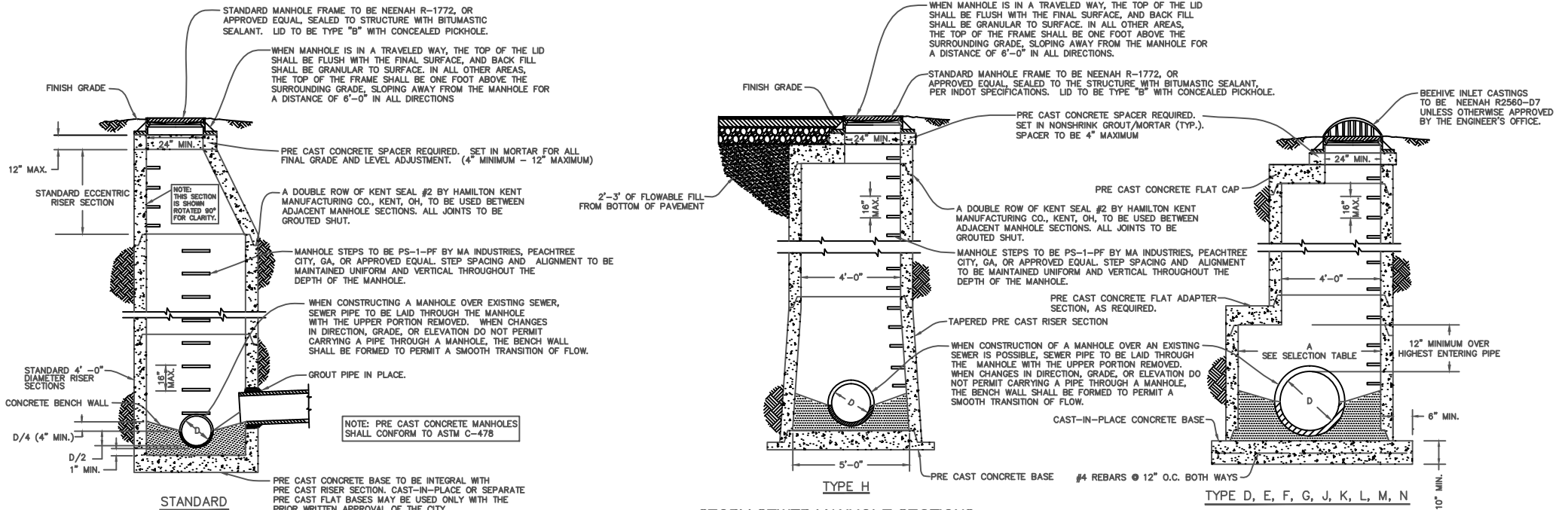
SEWERS SHALL BE "FLOODED" BEFORE TELEVISION INSPECTION. THE IMAGE SHALL BE CLEAR ENOUGH TO ENABLE THE CITY REPRESENTATIVE AND OTHERS VIEWING THE MONITOR TO EASILY EVALUATE THE INTERIOR CONDITION OF THE PIPE.

ALL UNACCEPTABLE CONDITIONS FOUND DURING TELEVISION INSPECTION MUST BE CORRECTED BY THE CONTRACTOR AND RETELEVIEWED.

UNACCEPTABLE CONDITIONS THAT ADVERSELY EFFECT THE ABILITY OF THE SYSTEM TO FUNCTION AS DESIGNED OR TO BE PROPERLY MAINTAINED AND MAY INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING.

- A. PROTRUDING TAPS
- B. CRACKED OR FAULTY PIPE
- C. MISALIGNED OR DEFORMED PIPE
- D. DEBRIS IN LINE
- E. INFILTRATION/EXFILTRATION
- F. EXCESSIVE GAPS AT JOINTS
- G. BELLIES OR SAGS WITH A DEPTH GREATER THAN OR EQUAL TO 10% (OR A MAXIMUM OF 3") OF PIPE DIAMETER AND/OR A LENGTH GREATER THAN 25 FEET

DETAILS AS TO REQUIRED CCTV EQUIPMENT AND REQUIRED TELEVISION INSPECTION REPORT ARE AVAILABLE FROM THE CITY ENGINEER'S OFFICE.

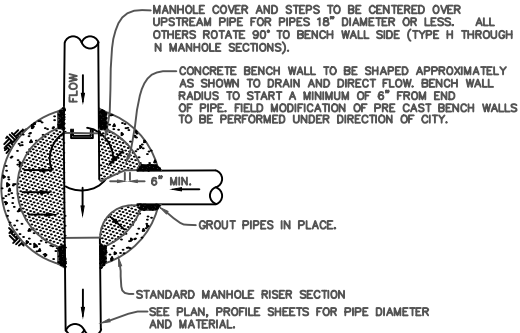


STORM SEWER MANHOLE SECTIONS

NOT TO SCALE

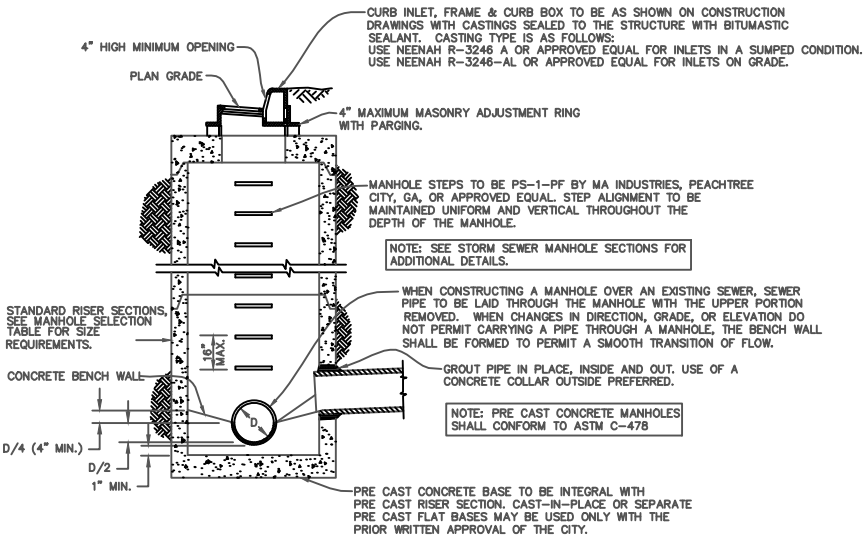
MANHOLE SELECTION TABLE - CIRCULAR					
TYPE	PIPE DIAMETER D	RISER DIAMETER A	MAXIMUM PIPE SIZE FOR MAIN LINE	MAXIMUM PIPE SIZE 90° TO MAIN LINE	
STANDARD	UP TO 24"	48"	24"	24"	
H	24"-36"	---	36"	30"	
J	24"-36"	60"	36"	30"	
K	36"-48"	72"	48"	36"	
L	48"-54"	96"	54"	48"	
M	54"-72"	102"	72"	66"	
N	72"-84"	108"	84"	72"	

MANHOLE SELECTION TABLE RECTANGULAR		
TYPE	PIPE DIAMETER	WIDTH (MIN)
STANDARD	UP TO 24"	48"
D	27"-42"	60"
E	48"-60"	78"
F	66"-84"	108"
G	90"-108"	132"



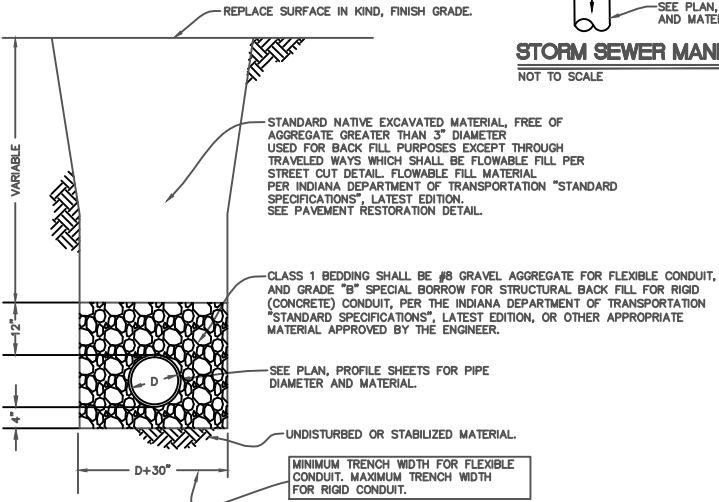
STORM SEWER MANHOLE PLAN

NOT TO SCALE



STORM SEWER MANHOLE - INLET

NOT TO SCALE



STANDARD BEDDING DETAIL

NOT TO SCALE



DWN BY: AJB

DATE: 12/23/2014

SCALE: N.T.S.

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

STORM SEWER
TYPICAL DETAILS AND NOTES

CERT.

SHEET:

OF:

JOB No.

DRG. No.

FILE: